

# The Economics of Animal Production of Household Garden

Jawad Atef Al-Dala'een<sup>1</sup>

<sup>1</sup> Karak University College, Al-Balqa Applied University, Al-Salt Jordan

Correspondence: Jawad Atef Al-Dala'een, Karak University College, Al-Balqa Applied University, Al-Salt 19117, Jordan. Tel: 962-78-626-4002. E-mail: jawad.papers@gmail.com

Received: December 13, 2017

Accepted: January 16, 2018

Online Published: February 15, 2018

doi:10.5539/jas.v10n3p307

URL: <https://doi.org/10.5539/jas.v10n3p307>

## Abstract

This research concerns about the contribution of household garden animal production economics in improving household life conditions. The objective of this research is to investigate the inputs, outputs and processing economics of animal production in households' gardens. Questionnaire used for data collection. The questionnaire included four major parts including the characteristics of household people, the inputs, outputs and processing activities of household animal breeding. The population divided into six strata according to household income. A random sample selected of each stratum. The results showed that the household animal breeding species dependent on garden size. In large gardens, the livestock activities dominated. The income gained of animal activities included a wide range of products for poultry and livestock.

**Keywords:** household gardens, economics, animal production

## Introduction

Household gardens through economical perspective contribute in improving the household living standards (S. Mazumdar & S. Mazumdar, 2011). Household gardening would contribute to provide family with daily food requirements, as well as improve household income and provide job opportunities for workers (Kobayashi et al., 2010). Animal breeding considered one of the household activities that practiced in sub-urban and rural areas in developing countries, where household health improved through the consumption of animal production locally or the returns of products sale for the external society. In Jordan, marketing the animal production of household production attracted wide sector of local society.

In some countries including Jordan, animal breeding through household gardens is considered as good economic activity that alleviate the poverty especially in suburban areas. Some social organizations fund such activities to improve family income and improve the household capabilities to access food (Galhena et al., 2013; Rodrigue et al., 2015).

Economically, households' gardens activities should carry in a way that accomplishes new values for families and encourage the family to continue practicing these activities (Igue et al., 2000). The extent of success of garden economically depends mainly on the way the family looking for the garden. The more serious thinking of gardens as a business will increase its potential and improve its continuity and sustainability (Coomes et al., 2004; Trinth et al., 2003; Watson et al., 2002).

Animal production includes livestock and poultry activities, which form integrated sources of food for family and garden economic activities (Thaman, 1995). These two sources provide families with milk, red meat and white meat that integrate the animal protein sources. The breeding of livestock in household gardens requires high space due to the nature of livestock, while poultry breeding requires less space and can be breed with large numbers (Pulami et al., 2004). Wide variety of animal products produced through livestock and poultry will increase the possibility of practicing local economic activities to sell products for local markets (Vasey, 1985; Ali, 2005; Jannolti et al., 2009). Despite the fact that livestock and poultry contributes to family, the returns of both activities differs widely due to wide prices of products (Marsh, 1998; Danoesastro, 1980; Devendra & Thomas, 2002). Moreover, households use the manure produced of animal activities as fertilizer for sell or local use.

## 2. Methodology

Recently, the household garden production became one of the economic solutions to improve household income and nutritive value (Legesse et al., 2016). The objective of this paper is to investigate the household returns of

gardening animal activities according to family income and location. To accomplish this objective, questionnaire used as a tool to collect data. The questionnaire designed to collect information about the socio-economic characteristics of households, animal production practices in households' gardens. Animal production included parts that was concerned for the collection of data about the input and the output of agricultural activities of household gardens. The questionnaire was prepared and tested before the collection of the final sample.

The population of this study includes all households in urban, sub-urban, and rural that contain gardens. For the purpose of this research, comprehensive survey considered very difficult; a random sample taken. The population of this research divided into six stratum. The income and classification of household considered in stratifying the population. The different strata was representing different household income levels as well as the location of household garden in urban, sub-urban and rural areas. The strata were as follow:

Stratum 1: represents the people with low income

Stratum 2: represents people with low to moderate income

Stratum 3: represents people from moderate to high income

Stratum 4: represents the people with high income

Stratum 5: represents Wadi Al Ssir Area

Stratum 6: represents Amman suburbs

The collected data entered using Excel. The data classified into two major topics including plant production. Each section of data divided to socio-economic characteristics and the inflow and outflow of the gardening activities. The collected data entered to SPSS (Ver. 22) for analysis. Excel used to calculate and accumulate the expenses items and returns.

### 3. Results and Discussion

Figure 1 shows the work status of the household members who care for their household garden. The results revealed that females have more attitudes to care for household garden more than males. Among females, the housewives were the highest among household females who care for households' garden. This is justified as housewives spend very much time at homes. On the other hand, males also care for the household gardens with less time compared to females.

The care for gardens included all family members with different levels. The paid up family workers were the second family category that care for household gardens. The least care was given by the people inside the family who has income or by the students and disabled members.

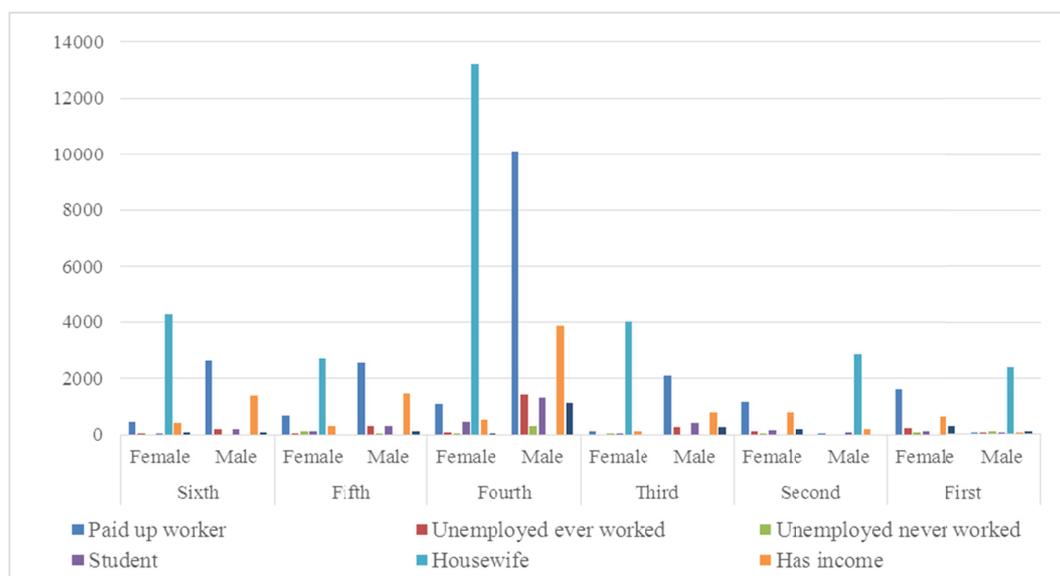


Figure 1. Distribution of household members looking after the animal production garden by sex, status of economic activity and stratum

The care of gardens with animal production requires hiring workers of animal production good experience to take over all the garden processes. Figure 2 shows that the most dominant outsource help was given by hired workers, garden technicians and relatives or friends who have experience in animal production.

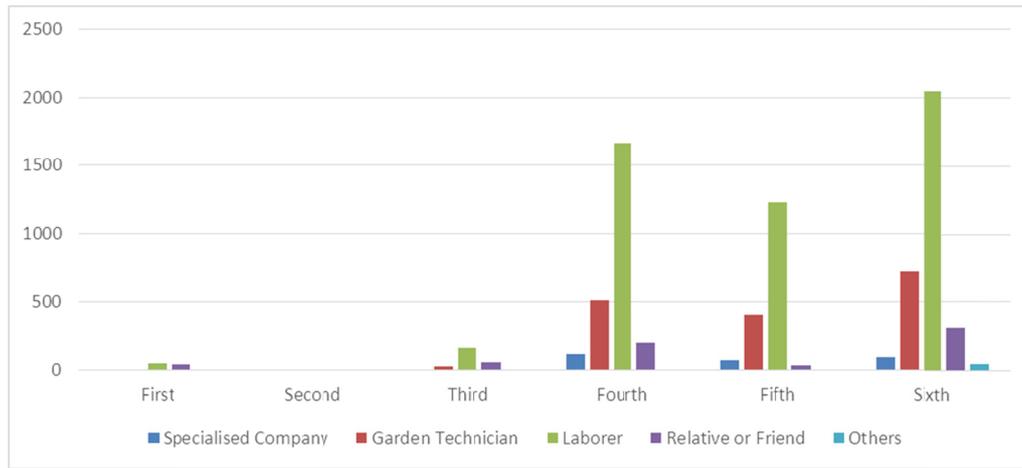


Figure 2. Distribution of gardens by method of looking after the garden excluding household members and stratum

The pattern of outsource labor was concentrating on hired workers to care for gardens. The increase of garden size increasing the demand on hiring outsources to care for gardens (Figure 3). The garden’s technicians hired with less percentage compare to individual workers to care for animal production gardens.

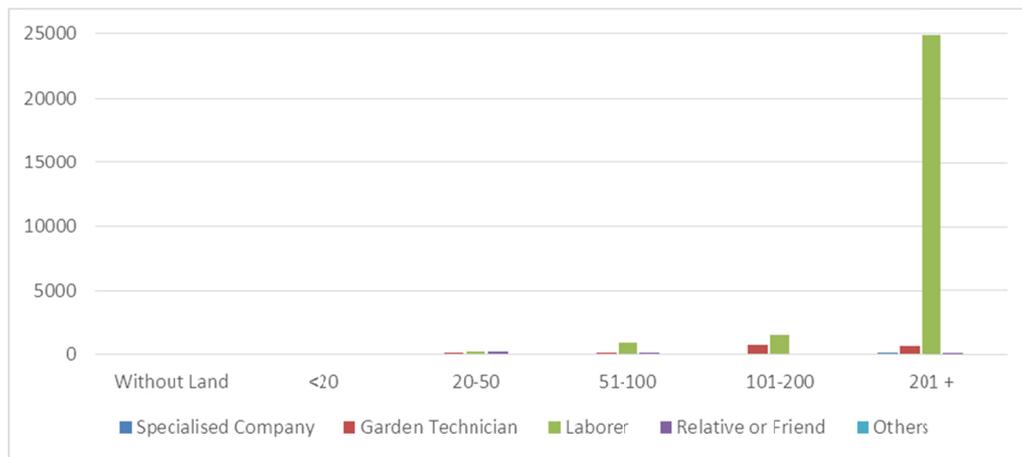


Figure 3. Looking after the garden by agency or person excluding household members by area class

Figure 4 shows the distribution of household financial sources to support the household gardening activities by stratum. Personal funding of gardening activities considered the main financial source that covers different activities. Most of households, especially in the first five stratum, considered the household gardens’ expenses part of the total household expenses. These households consider gardens as part of family recreation and did not consider the garden activity as economic activity.

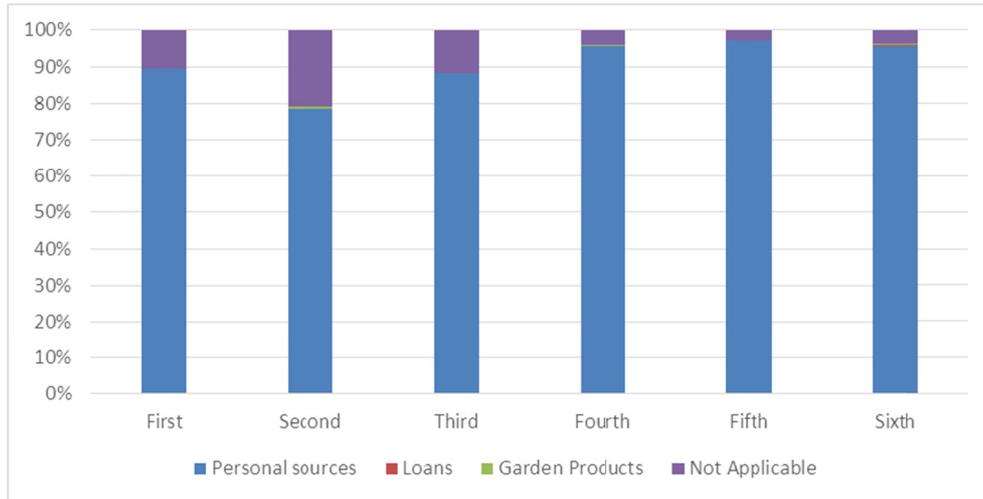


Figure 4. Distribution of household financial sources by stratum

Concerning the source of information and knowledge to take care for gardens, most of the surveyed households indicated that the personal experience considered the main sources of knowledge to run gardening activities. Whereas, some households showed that they rely on other sources to gain knowledge to run gardening activities. The other sources included gaining help of friends, neighbors, or retail shops for agricultural goods. Some households reported that they rely on media, books and publications, or private companies as a source of information to care for the gardening activities (Figure 5).

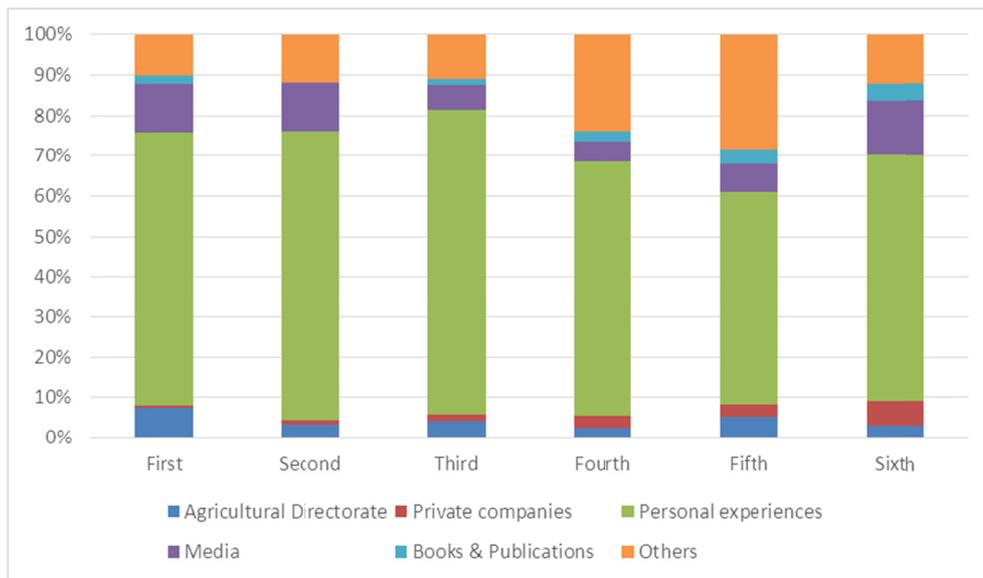


Figure 5. The distribution of households according to source of information by stratum

Figure 6 shows the gardening activities expenses for animal production in household gardens within the same stratum. The results showed that the highest expense was for input services. This expected in animal household gardens as most of the input directed for care activities. The highest second highest input was for concentrated feed for animals then water. In the first stratum, the highest amount of expenses was for input services and concentrated feed for animals. In this stratum, these two costs were high due to the high number of gardens found under this stratum. The behavior of expenses was similar in the second stratum except the expenses for concentrated feed higher compared to input services. In the third stratum, input services' expenses higher

compared to concentrated feed. In fourth and fifth strata, the higher expense was on input services other than expenses because these two strata are characterized by high income households. In the sixth stratum, the expenses of input services higher compared to concentrated feed.

In general, the expenses pattern within each stratum was dependent on the location of the gardens and the household income. The higher income of household indicates higher tendency to expend more on the household garden.

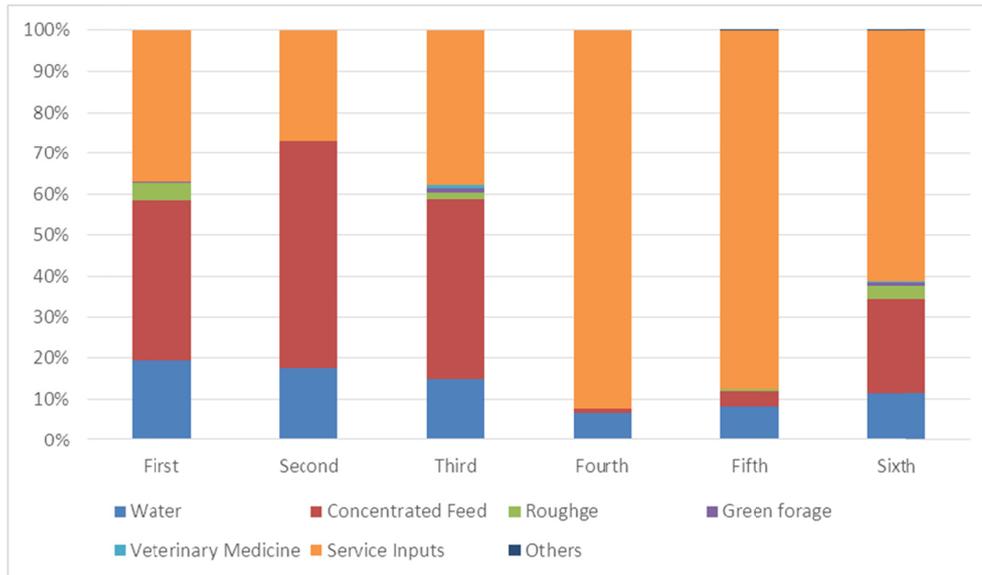


Figure 6. Value of intermediate commodities and service inputs used in the garden by stratum (JD)

The pattern of expenses changes among different strata (Figure 7). For water, the highest expense recorded in stratum six, which characterized by the highest area, followed by the fifth stratum, which is characterized by the highest household income, then the fourth stratum, which has income order before the fifth stratum. The least value for water consumption recorded for the first stratum.

The highest value of concentrated feed recorded for the sixth stratum, which characterized by the highest area and contained the highest number of breeding animals with different species. The highest second expenses of concentrated feed value recorded in the third stratum. The consumption of concentrated feed was the lowest in the first and second stratum (Figure 7).

For roughage, the highest value consumed in sixth and third strata due to the type of activities practiced in these two strata. In the sixth stratum, the large area and the highest number of animals justify the high consumption of roughage. For veterinary medicine, the highest consumption also was in the sixth and third stratum due to the highest number of breeding animals recorded due to area and location of these two strata (Figure 7).

Concerning the services input, the highest expenses reported in the sixth stratum then the fifth stratum and the fourth stratum. The services expenses pattern was a results of area for the sixth stratum and high households' income. Moreover, the other scattered expenses reported only for strata sixth and fifth for the same previous causes.

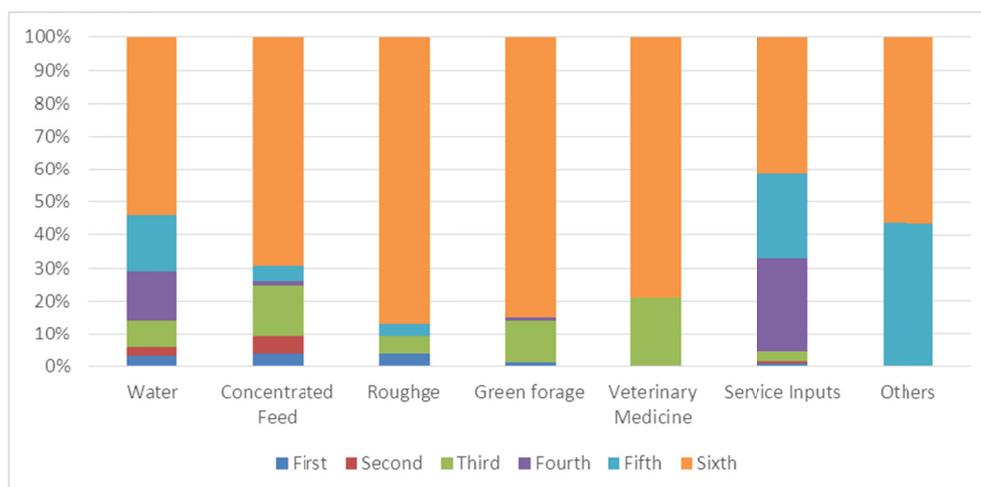


Figure 7. Value of intermediate commodities and service inputs used in the garden by item (JD)

The distribution of expenses according to the household garden area gives more deep understanding of the garden needs for animal production (Figure 8). The pattern of water consumption affected directly by the garden area. The highest value of water recorded for the largest garden size (> 200 m<sup>2</sup>). The second highest water value recorded for garden area 101-200 m<sup>2</sup>. The least water value was recorded for the least garden sizes < 20 m<sup>2</sup> and 20-50 m<sup>2</sup>.

The highest concentrated feed value was higher for the highest garden area (> 200 m<sup>2</sup>) followed by the less garden area (101-200 m<sup>2</sup>). The least gardens' area < 20 m<sup>2</sup> recorded higher value for concentrated feed compared to the second and third gardens' area. In the smallest gardens' areas, breeders rely on purchased concentrated feeds due to the lack of local animal feed production.

For roughage, the highest value was recorded for the area < 20 m<sup>2</sup> the least gardens' area. These results can be justified as the household gardens in this area depend mainly on outsources for breeding activities (Figure 8). Same pattern of expense recorded for green forages.

For the expense of veterinary medicine, the highest value reported in the least area gardens, which resulted of the type of animals breeding of this area. The second expenses value recorded for the largest area due to the highest number of breeding animals. The highest service inputs recorded for largest two areas respectively. Moreover, the other expenses were recorded for the highest two areas only (Figure 8).

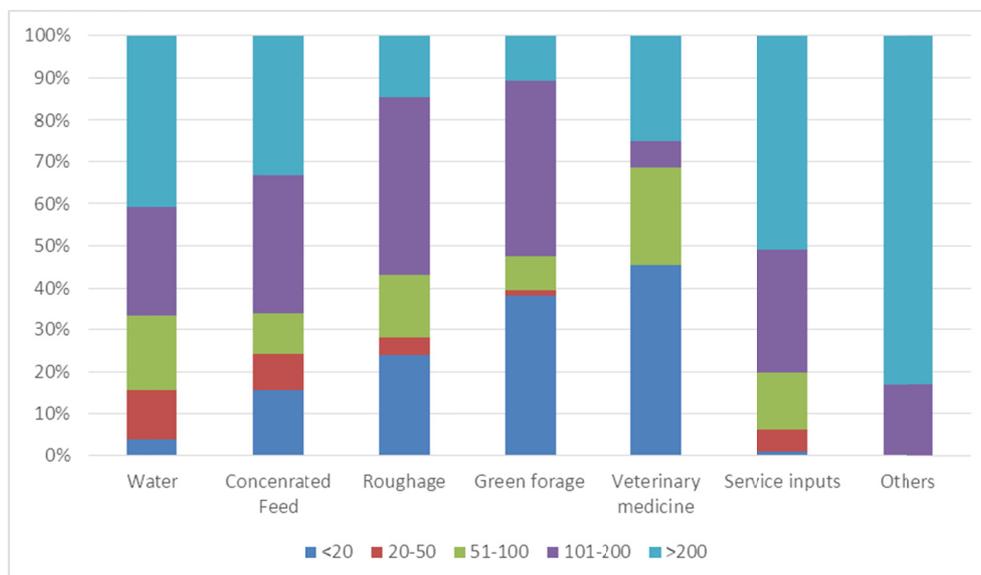


Figure 8. Value of intermediate commodities used in the garden by item (JD)

The distribution of expenses within each garden size was shown in Figure 9. In gardens with area < 20 m<sup>2</sup>, the highest consumption was for concentrated feed followed by input services then for water. While for gardens with area 20-50 m<sup>2</sup>, the highest expenses was for the input services followed by the concentrated feed and water. In the gardens with large areas the input services recorded the higher expenses followed by the concentrated feed and water (Figure 9).

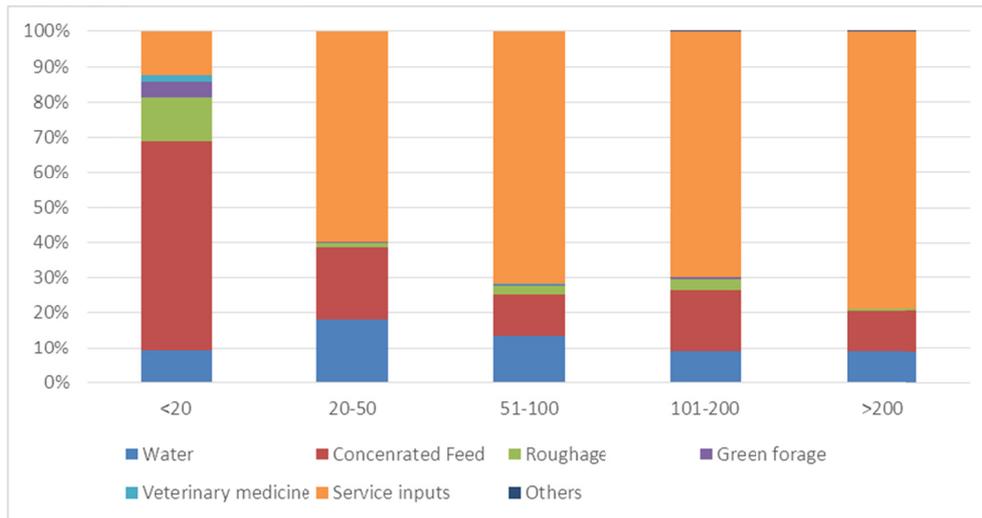


Figure 9. Value of intermediate commodities used in the garden by area class (sq. m) (JD)

For the returns, the results of Figure 10 showed that the highest returns were recorded for sheep and goats new born, followed by the production of chicken eggs, and sheep and goats milk. The poultry new born and fattening sheep and goats recorded considerable income. The distribution of returns of animal production profitable for household sustains animal production activities.

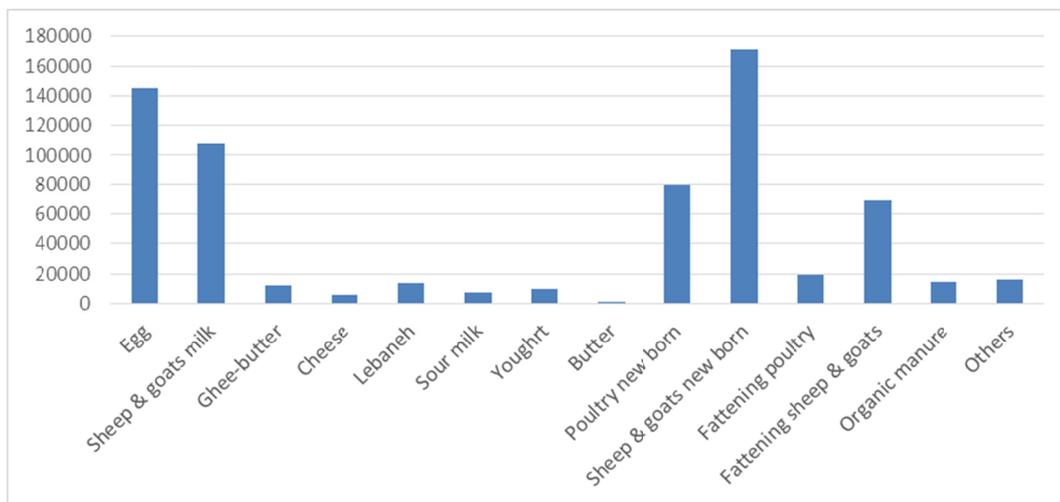


Figure 10. Value of livestock production by item in general (JD)

Figure 11 shows the distribution of animal production per stratum. The results showed the highest animal production returns recorded in the sixth stratum. The high number of animal breeding in this stratum justifies the high returns for all products. The second stratum characterized by high poultry newborn returns. The third

stratum characterized by sour milk production returns. The return distribution of each stratum reflects that the profit of animal breeding achieved in all of them.

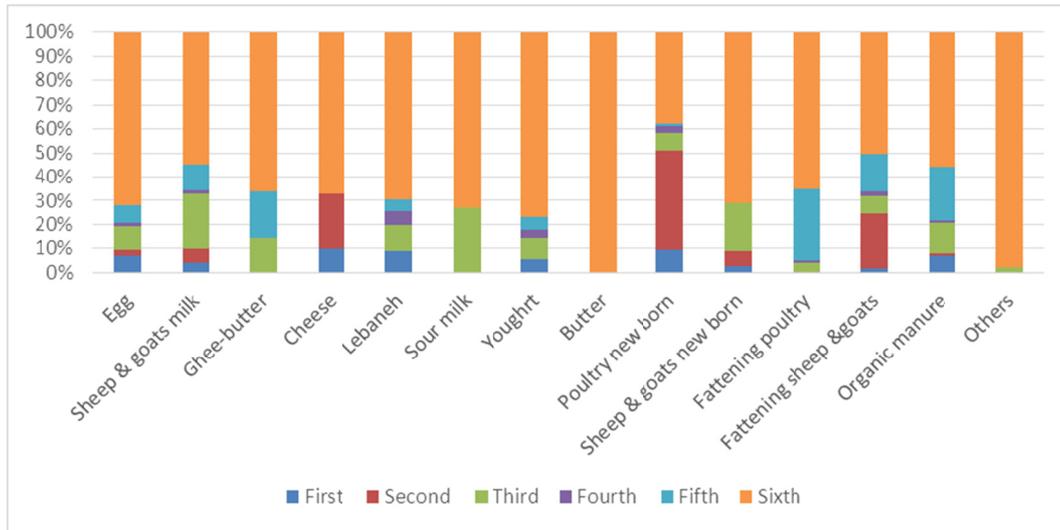


Figure 11. Value of livestock production by item (JD)

Concerning the distribution of production returns per stratum, the results showed that the highest returns in the first stratum was recorded for egg production, poultry new born and sheep and goats new born (Figure 12). In the second stratum, the highest production value recorded for poultry newborn followed by fattening sheep and goats. In the thirds stratum, the highest returns recorded for sheep and goats milk production and fattening sheep and goats. In the fourth stratum, the highest value of production recorded for egg production, followed ghee-butter production. In the fifth stratum, the highest returns recorded for egg production, milk of sheep and goat and fattening sheep and goats. In the sixth stratum, sheep and goat new born accomplished the highest returns followed by egg production. The distribution of returns in each stratum was affected by the location of each stratum.

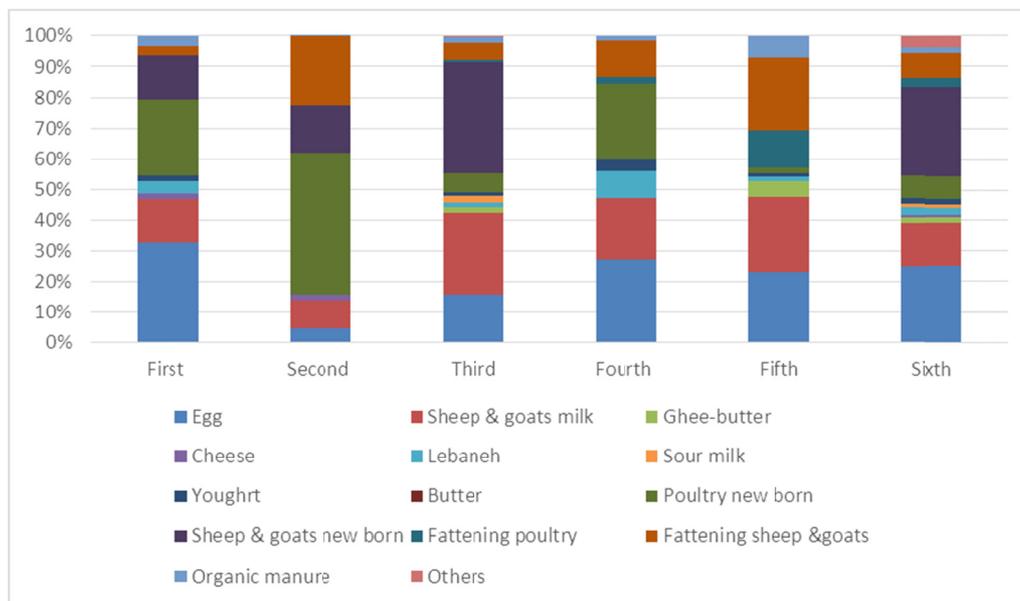


Figure 12. Value of livestock production by stratum (JD)

#### 4. Conclusions

The objective of this research is to investigate the returns of animal breeding in household gardens. Questionnaire used for data collection. The study household population divided to six strata. The first five strata classified according to household income in urban areas, while the sixth stratum was for gardens in suburban areas. The questionnaire included questions about the pattern of household garden, input for animal production and the returns classified according to the type of activities.

The results showed that the household families are very interested in practicing animal production activities in their households' gardens and sustain these activities because of its positive effect on their lives. The households' gardens of animal production distributed on wide range areas in urban and suburban areas. Animal production species affected directly by gardens' location, size, household income, and type of animals preferred by household members.

All sizes of gardens achieved considerable profit from animal production in all strata. Moreover, the returns of gardens increased as the size of garden increases. The highest concern in small gardens' areas was to invest in chicken eggs production and pigeons due to the small area required to run activities. In large area gardens especially stratum six, the concern for sheep and goat breeding was higher and so the returns for the processing and newborn of these activities higher compared to other strata. The results showed that the households insist to expend on animal breeding activities using their own funding sources. Very small number of household used external sources to fund their activities. Moreover, the results showed that the households search for every possible tools to enrich their experience in breeding animals in their households' gardens.

#### References

- Ali, A. M. S. (2005). Home gardens in smallholder farming systems: Examples from Bangladesh. *Hum Ecol*, *33*, 245-270. <https://doi.org/10.1007/s10745-005-2434-8>
- Coomes, O. T., & Ban, N. (2004). Cultivated plant species diversity in home gardens of an Amazonian peasant village in northeastern Peru. *Econ. Bot.*, *58*, 420-434. [https://doi.org/10.1663/0013-0001\(2004\)058\[0420:CPSDIH\]2.0.CO;2](https://doi.org/10.1663/0013-0001(2004)058[0420:CPSDIH]2.0.CO;2)
- Danoesastro, H. (1980). *The Role of Homegardens as a Source of Additional Daily Income. Bandung, Indonesia*. Paper presented at the Seminar on the Ecology of Homegardens III.
- Devendra, C., & Thomas, D. (2002). Smallholder farming systems in Asia. *Agr Syst*, *71*, 17-25. [https://doi.org/10.1016/S0308-521X\(01\)00033-6](https://doi.org/10.1016/S0308-521X(01)00033-6)
- Galhena, D., Freed, R., & Maredia, M. (2013). Home gardens: A promising approach to enhance household food security and wellbeing. *Agriculture and Food Security*, *2*, 8. <https://doi.org/10.1186/2048-7010-2-8>
- Iannotti, L., Cunningham, K., & Ruel, M. (2009). *Improving Diet Quality and Micronutrient Nutrition: Homestead Food Production in Bangladesh*. Discussion Paper 00928. Washington DC, USA: International Food Policy Research Institute.
- Igue, A. M., Floquet, A., & Stahr, K. (2000). Land use and farming systems in Benin. In F. Graef, P. Lawrence, & M. von Oppen (Eds.), *Adapted farming in West Africa: Issues, potentials and perspectives* (pp. 227-238). Stuttgart, Germany: Verlag Ulrich E. Grauer.
- Kobayashi, M., Tyson, L., & Abi-Nader, J. (2010). *The Activities and Impacts of Community Food Projects 2005-2009* (pp. 1-28).
- Legesse, A., Tesfay, G., & Abay, F. (2016). The impact of urban home gardening on household socio-economy. *Arts and Design Studies*, *39*, 21.
- Marsh, R. (1998). Building on traditional gardening to improve household food security. *Food Nutr Agr*, *22*, 4-14.
- Mazumdar, S., & Mazumdar, S. (2012). Immigrant home gardens: Places of religion, culture, ecology, and family. *Landsc Urban Plan*, *105*, 258-265. <https://doi.org/10.1016/j.landurbplan.2011.12.020>
- Pulami, R. P., & Poudel, D. (2004). Home Garden's Contribution to Livelihoods of Nepalese Farmers. Pokhara, Nepal (Paper presented at Home Gardens in Nepal). *Proceeding of a workshop on Enhancing the contribution of home garden to on-farm management of plant genetic resources and to improve the livelihoods of Nepalese farmers: Lessons learned and policy implications*.

- Rodrigue, C. G., Adandé, B. F., Valère, K. S., Alix, F. R. I., Romain, G. K., & Achille, E. A. (2015). Factors affecting home gardens ownership, diversity and structure: A case study from Benin. *J. Ethnobiol Ethnomed*, 11, 56. <https://doi.org/10.1186/s13002-015-0041-3>
- Thaman, R. R. (1995) Urban food gardening in the Pacific Islands: A basis for food security in rapidly urbanising small-island states. *Habitat International*, 19(2), 209-224. [https://doi.org/10.1016/0197-3975\(94\)00067-C](https://doi.org/10.1016/0197-3975(94)00067-C)
- Vasey, D. E. (1985). Household gardens and their niche in Port Moresby, Papua New Guinea. *Food Nutr Bull*, 7(3), 37-43.
- Watson, J. W., & Eyzaguirre, P. B. (2002). Home gardens and in situ conservation of plant genetic resources in farming systems. *Proceedings of the 2nd International Home Gardens Workshop*, 17-19 July 2001, Witzhausen, Federal Republic of German.

### Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).